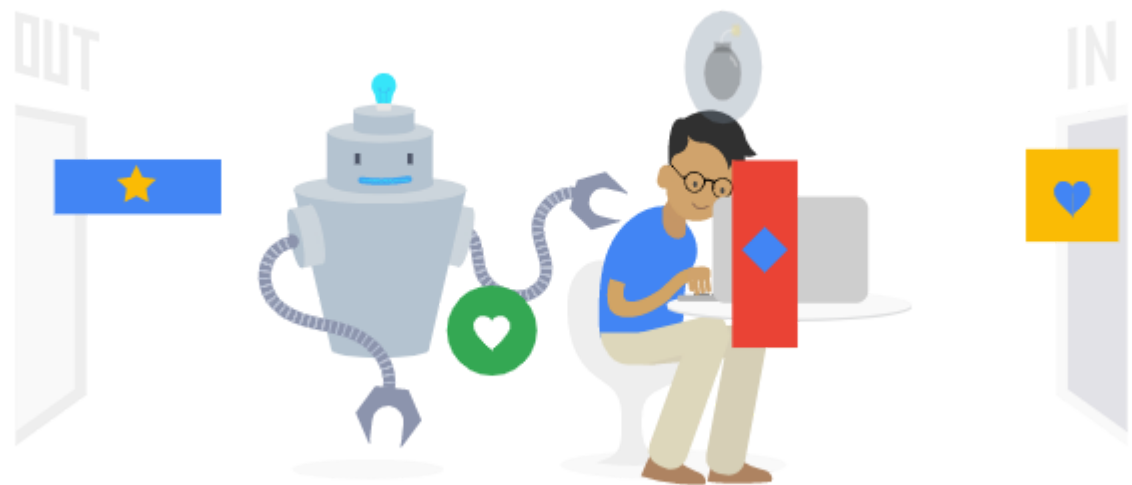


# EXHIBIT 7

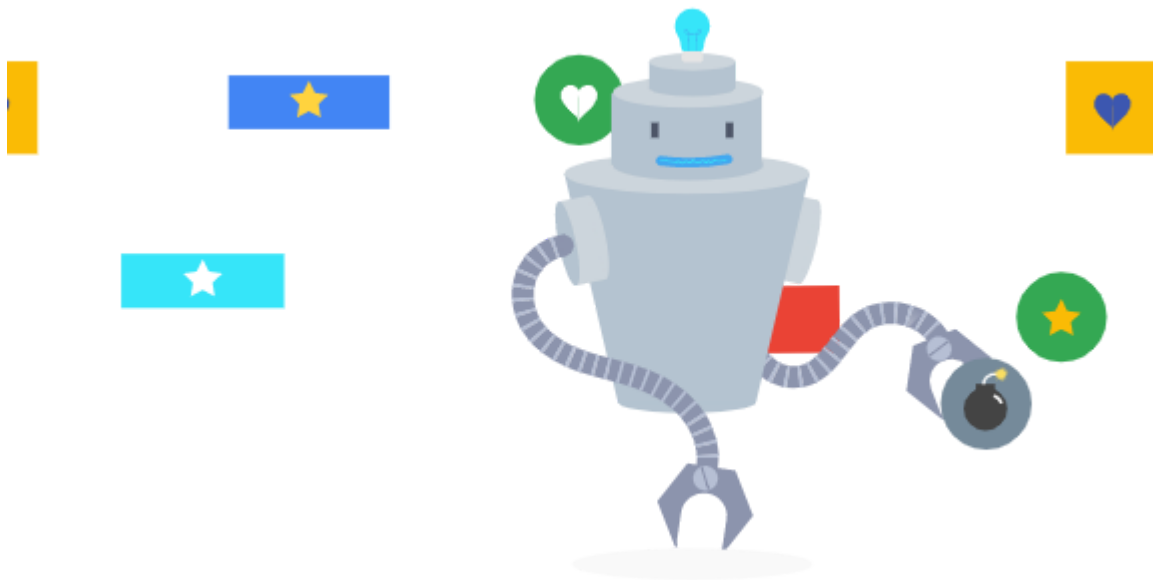
## How does Google prevent invalid activity?



Google takes invalid activity very seriously. We use over a hundred complex algorithms to spot bad traffic as it happens, and our global team of PhDs, data scientists, engineers, and researchers works around the clock to prevent advertisers from paying for — and publishers benefitting from — invalid clicks, impressions, views, or interactions.

When we find something wrong, we try to make it right as soon as possible. We suspend or disable invalid accounts, and may withhold payments to the publisher. When appropriate and possible, that money is credited back to the advertisers — not only for the month where we found the invalid activity, but often for the previous month, as well.

## Automated filters.



### Keeping invalid traffic from impacting you.

We use over 180 sophisticated filters to stop the vast majority of invalid traffic in real time or soon after. With a combination of cutting-edge technology and a steady stream of data, our filters actually get smarter over time. A team of specialists continuously monitors and updates each filter to make sure they're running at peak efficiency.

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## Filtering in real-time.





### Stopping invalid traffic before it happens.

Our sophisticated filters stop most invalid traffic right from the start. If the activity is associated with a blacklisted user agent or IP address, for example, or if the publisher has a suspiciously high clickthrough rate or traffic from a single user, our filters will catch it before its ever charged to the advertiser.

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### Filtering in near real-time.





### Removing confirmed bad traffic.

Some invalid traffic takes more time to detect. If something makes it through our filters but still seems fishy, we'll monitor the traffic data until we can be sure. In some cases, it may take up to several weeks to recognize a suspicious pattern.

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### Manual detection and review.





### Looking into reported cases of invalid activity.

Because no filter is perfect, we also manually review issues flagged by our advertisers, publishers, and automated systems. Whenever we find new threats like botnets or crawlers, we use that information to improve our filters. To make sure we're not filtering any legitimate traffic, we periodically review all our filters and adjust as needed.

When our filters identify suspicious traffic but can't be sure it's invalid, our automated systems flag the anomalies and gather data for days to weeks. Then our team of live reviewers can analyze the data and decide what to do. Then look at the way users interact with the ads to figure out if the interactions are intentional or accidental, and separate the non-human traffic from normal activity. Then they look for patterns that could signal invalid traffic from a particular source.

When our team identifies invalid behavior, we use the data to update and improve our filters, so we can automatically stop new traffic with the same characteristics. We may also set an alert to be informed of unusual spikes in that traffic, so we can learn more about that behavior.



### Protecting you from new attacks with advanced research.

Our Ad Traffic Quality team pores over traffic data to uncover sources of non-human traffic. We search out anomalies in our data, looking for code samples that can be used to find all traffic coming from a particular source. Then, we analyze the code to identify the source and keep its traffic from entering our systems.

We also research new kinds of invalid traffic that our filters aren't equipped to detect yet, and investigate small or special cases that might otherwise slip through the cracks.

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### Suspending and disabling accounts.





### Stopping invalid activity at the source.

Sometimes, the best way to protect advertisers and users is to suspend or disable a publisher's account. If a publisher generates an excessive amount of invalid traffic, we may disable the account immediately. If, on the other hand, a publisher seems to be generating invalid traffic by accident, we may only suspend their account until they fix the problem. Repeat offenders and deliberate abusers may have their accounts disabled and find themselves banned from using our ad platforms.

Publishers whose accounts we've disabled have the right to appeal their case. We review every appeal that supplies enough information to investigate, and if we find good cause to reactivate a suspended account, we'll do so right away.

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[HOW CAN I PREVENT INVALID TRAFFIC?](#) ➞



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